

Claims

1. An image production system, the system comprising:
- 5 a marking engine that receives at least one sheet onto which an image is transferred, the marking engine including an imaging system that transfers the image onto the at least one sheet;
- a sheet feeder that feeds the at least one sheet to the marking engine at a first speed;
- a registration system that aligns and moves the at least one sheet on the imaging system at a second speed, the marking engine having
- 10 an output downstream of the imaging system; and
- a speed adjust system upstream of the registration system, the speed adjust system connected to receive the at least one sheet from the sheet feeder at the first speed and output the at least one sheet to the registration system at the second speed.
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2. The image production system of claim 1 wherein the speed adjust system adjusts the timing at which the at least one sheet is output to the registration system to refine the timing at which the at least one sheet is outputted to the registration system.
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3. The image production system of claim 1 wherein:
- the marking engine transmits a synch pulse signal indicating a nominal time when the at least one sheet is to arrive at the speed adjust system;
- 25 the speed adjust system determines the actual arrival time of the at least one sheet at the speed adjust system; and
- the speed adjust system compares the synch pulse signal to the actual arrival time and uses the comparison to determine an adjust time when the speed adjust system changes the speed of the at least
- 30 one sheet from the first speed to the second speed.

4. The image production system of claim 3 wherein the speed adjust system decelerates the at least one sheet from the first speed to the second speed and (1) if the at least one sheet arrives earlier than the nominal time, the speed adjust system changes from the first speed to the second speed earlier than the adjust time and (2) if the sheet arrives later than the nominal time, the speed adjust system changes from the first speed to the second speed later than the speed adjust time.
5. The image production system of claim 3 wherein the speed adjust system changes the speed of the at least one sheet to a third speed different from the first and second speeds before the speed is changed to the second speed.
6. The image production system of claim 3 wherein the speed adjust system first stops the at least one sheet after it is received and then adjusts the speed from the stopped speed to the second speed.
7. An image production system, the system comprising:
- a marking engine that receives at least one sheet, the marking engine including a marking engine controller, wherein images are formed on the sheet,
- a registration system upstream of an imaging system, wherein the registration system aligns the at least one sheet for the marking engine;
- a speed adjust system including a speed adjust system controller;

wherein the marking engine controller transmits a synch pulse signal to the speed adjust system controller when the sheet approaches the speed adjust system;

5 the speed adjust system being configured to transmit a signal to the speed adjust system controller of an arrival of the sheet; and

the speed adjust system controller being configured to determine a measured arrival time of the at least one sheet and compare the measured arrival time with the synch pulse signal to adjust a speed of the sheet before the sheet is transferred to the registration system.

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8. The image production system of Claim 7, wherein the speed adjust system comprises speed adjust rollers and at least one speed adjust sensor.

9. The image production system of Claim 8, wherein the speed adjust sensor is configured to transmit the signal to the speed adjust controller when the sheet contacts the speed adjust sensors.

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10. The image production system of Claim 7 further comprising a stepper motor to adjust the speed of the speed adjust system.

11. The image production system of Claim 10, wherein the stepper motor is connected to the speed adjust rollers, and the stepper motor controls the speed adjust rollers to adjust the speed of the at least one sheet.

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12. A method of compensating for the variability of an arrival time of at least one sheet in an image production system, the image production system including an imaging system and a registration system, the method comprising:

5 transmitting the at least one sheet to the registration system;

 generating a synch pulse signal used to indicate a nominal time when the at least one sheet is to arrive at a speed adjust system disposed upstream of the registration system;

10 sensing and determining the arrival time of the at least one sheet at the speed adjust system and generating a measured arrival time signal indicating the arrival time;

 comparing the synch pulse signal with the measured arrival time signal to determine a time difference between the synch pulse signal and the measured arrival time signal; and

15 adjusting a travel speed of the at least one sheet from a first speed to a second speed based on the time difference at a speed adjust system;

 transmitting the at least one sheet from the speed adjust system at the second speed to the registration system;

20 at the registration system receiving the at least one sheet at the second speed and adjusting at least one of the skew, timing and crosstrack position of the at least one sheet for delivery to the imaging system; and

 transferring an image to the at least one sheet.

25 13. The method of Claim 12, wherein adjusting comprises changing the travel speed of the at least one sheet by decelerating the travel speed of the at least one sheet.

- 5 14. The method of Claim 12, wherein the adjusting comprises at the speed adjust system decelerating the at least one sheet from the first speed to the second speed at a speed adjust time for sheets arriving at the nominal time and (1) if the at least one sheet arrives earlier than the nominal time, changing from the first speed to the second speed earlier than the adjust time and (2) if the sheet arrives later than the nominal time, changing from the first speed to the second speed later than the speed adjust time.
- 10 15. The method of claim 14 wherein the speed adjust system changes the speed of the at least one sheet to a third speed different from the first and second speeds before the speed is changed to the first speed.
- 15 16. The method of claim 15 further comprising stopping the at least one sheet after it is received at the speed adjust system before it adjusts the speed to the second speed.
17. The method of claim 12 wherein the speed adjust system decelerates the at least one sheet from the first speed.
- 20 18. The method of claim 12 further comprising adjusting the timing at which the at least one sheet is output from the speed adjust system to the registration system to refine the timing at which the at least one sheet is output to the registration system.